REMARKS

Applicant respectfully requests reconsideration and allowance of claims 1-19 that are pending in the above-identified patent application. Claims 10-15 and 18-19 stand rejected. Claims 16 and 17 stand objected to. Claims 1-9 stand withdrawn. In view of the following discussion, Applicant submits that all pending claims are in condition for allowance.

Claim Rejections Under 35 U.S.C. §102:

At numbered parts 3-5 of the Office Action, the Examiner has rejected claims 10-13 and 18-19 under 35 U.S.C. §102(b) as being anticipated by Michaels et al. (U.S. Pat. No. 5,906,672) (hereinafter referred to as "Michaels"). Applicant respectfully traverses the Examiner's rejection.

Independent claim 10 recites a device for characterising OSI-materials, comprising: a closed reaction circuit having a device for supplying a gas flow containing oxygen, a pump for delivery of the gas flow, and a measurement cell for receiving the OSI-material; and a closed measurement circuit having a device for supplying a gas flow, a pump for delivery of the gas flow and a sensor arrangement for detecting oxygen, and an evaluation unit, wherein a sample loop with a defined volume is arranged in the closed reaction circuit, which for conveying the defined volume of the gas flow of the reaction circuit is operable to be switched into the closed measurement circuit from the closed reaction circuit, and the sample loop is operable to be switched into the closed reaction circuit from the closed measurement circuit. (Emphasis added.)

The Examiner alleges that the flow path of the gas that connects the outlets of the first and second bed has a gas flow capacity, and a defined volume. The Examiner alleges that the first and second sieve beds are the measurement circuit and the reaction circuit, respectively. The Examiner further alleges that the sample loop is considered to be the cyclic exchange of purging and flow of product enriched gas by actuating of the cross-over valve and the concentration equalization valve, switch-over branch. Applicant respectfully disagrees with the Examiner.

Applicant submits that Michaels does not disclose each and every limitation of independent claim 10 of the instant application for a plurality of reasons. First, the first and second sieve beds 10, 12 of the Michaels device cannot, and do not, anticipate a closed measurement circuit and a

closed reaction circuit as recited in independent claim 10 of the instant application. The first sieve bed 10 and the second sieve bed 12 do not have respective devices for supplying a gas flow and respective pumps for delivery of the gas flow as recited in claim 10 of the instant application. From FIG. 1 and related text in col. 5, lines 35-40, Michaels states that "[a] cross-over valving means 20…selectively and cyclically connects the inlet end of two beds, one at a time, …with a source of the gas mixture…supplied from a compressor 22 [connected to drive motor 23]." (Emphasis added.) Indeed, the gas of the Michaels device is supplied via only one compressor 22 and drive motor 23 to both sieve beds 10, 12 at different times, and, is not supplied via respective devices and pumps to each sieve bed 10, 12. Moreover, neither sieve bed 10, 12 has a sensor arrangement for detecting oxygen, and an evaluation unit as recited in claim 10 of the instant application. The only oxygen sensor 43 in the Michaels device is located away from the sieve beds 10, 12 near the product tank 30. Even assuming for the sake of argument that the product tank 30 of the Michaels device is a closed measurement circuit (which Applicant does not concede), the product tank 30 does not include a respective device for supplying a gas flow and a respective pump for delivery of the gas flow.

Second, Michaels does not disclose or suggest the structure of a sample loop for conveying a defined volume of the gas flow of the reaction circuit which the sample loop is operable to be switched into the closed measurement circuit from the closed reaction circuit, and is operable to be switched into the closed reaction circuit from the closed measurement circuit as recited in independent claim 10 of the instant application. Even assuming for the sake of argument that product enriched gas is allowed to flow between sieve beds 10, 12 of the Michaels device and that the either the first sieve bed 10 or the second sieve bed 12 acts as a closed measurement circuit or a closed reaction circuit (which Applicant does not concede), Michaels fails to disclose the structure of the sample loop because no portion of the first sieve bed 10 or second sieve bed 12 is rotated back and forth between the first and second sieve beds 10, 12 for conveying the volume of the gas flow of the reaction circuit as recited. Moreover, assuming for the sake of argument that the product tank 30 of the Michaels device is a closed measurement circuit or a closed reaction circuit (which Applicant does not concede), the product tank 30 also lacks the structure of the sample loop as recited in claim 10 of the instant application because the product tank 30 has no portion that is rotated back and forth

between the product tank 30 and either sieve bed 10, 12 of the Michaels device.

Third, Michaels does not disclose or suggest an OSI-material, and consequently, the Michaels device cannot, and does not, characterize an OSI-material. In fact, the Michaels device performs the opposite function of producing oxygen, rather than scavenging or indicating the presence of oxygen in a volume. From col. 5, lines 17-21 and lines 32-34, Michaels states that "[t]he separation material selectively adsorbs one or more adsorbable components and passes one or more nonadsorbable components of such gaseous mixture", and "[t]he zeolite adsorbs nitrogen, carbon monoxide, carbon dioxide, water vapor, and other significant components of air." Further, from col. 5, lines 50-59, Michaels states that a cross-over valve means is alternated between two positions so that one of the first and second sieve beds 10, 12 "is connected with compressor 22 to cause nitrogen adsorption and oxygen enrichment in the product gas." (Emphasis added). Indeed, the separation material of the Michaels device does not adsorb oxygen, and allows oxygen to flow out of the sieve beds 10, 12 and into the product tank 30. Further, the Michaels device does not disclose or suggest detecting oxygen levels in the sieve beds 10, 12. On the contrary, from col. 6, lines 3-7, Michaels states that "[w]hen the adsorption zone reaches the outlet end of the bed, adsorbable components begin to flow through the bed outlet into the nonadsorbable primary product stream." (Emphasis added.) Indeed, Michaels discloses the opposite of detecting an overflow of adsorbable components, which as aforementioned does not include oxygen. Michaels refers to the flow through of adsorbable components as the "breakthrough." When the breakthrough occurs, the Michaels system switches the supply of gas from one sieve bed 10 to the other sieve bed 12 to allow the first sieve bed 10 to purge the adsorbable components. In other words, Michaels teaches the detection of a breakthrough of adsorbable components, and does not disclose or suggest the structure and functionality of indicating oxygen in the sieve beds 10, 12. Therefore, the separation material of the Michaels device cannot anticipate an OSI-material, such as an oxygen scavenger and/or an oxygen indicator.

In contrast, the present invention as claimed in independent claim 10 of the instant application recites a device for characterising OSI-material in which the material is subjected to a gas mixture containing oxygen. From paragraph [0007], the specification of the instant application as originally filed states that "OSI-materials, specifically O_2-scavengers, O_2-indicators or O_2-scavenger/ O_2-indicator

systems are applied in the foodstuff industry, pharmaceutics industry, electronic industry, chemical industry, and with other applications." For these purposes, the respective OSI-material has to be characterized, and the basis for this characterization is the oxygen concentration in view of the time component. For example, FIG. 4 of the instant application shows the oxygen uptake in dependence of time as characterizing an O_2-scavenger or the change of colour dependent on oxygen concentration and time.

The present invention as claimed in independent claim 10 of the instant application comprises a closed reaction circuit having a device for supplying a gas flow containing oxygen, a pump for delivery of the gas flow, and a measurement cell for receiving the OSI-material; and a closed measurement circuit having a device for supplying a gas flow, a pump for delivery of the gas flow and a sensor arrangement for detecting oxygen, and an evaluation unit, wherein a sample loop is operable to be switched from the closed reaction circuit to the closed measurement circuit and from the closed measurement circuit to the closed reaction circuit. By way of example of at least one embodiment of the present invention as shown in FIGS. 1-3, a switch-over branch 3 and a sample loop 4 are operable to be switched in each case between the closed reaction circuit 1 and the closed measurement circuit 2. Indeed, the switch-over branch 3 and the sample loop 4 are either part of the closed reaction circuit 1 or part of the closed measurement circuit 2. The switch-over branch 3 and the sample loop 4 are structural components as shown in FIGS. 1-3.

The reaction circuit 1 and the measurement circuit 2 are closed and independent, and the sample loop 4 and the switch-over branch 3 are operable to switch between the two circuits. From paragraph [0023] of the instant application as originally filed, "[t]he reaction circuit 1 forms a closed reaction circulation and consists of a pump 5, of a…measurement cell 6…, of the sample loop 4 or the switch-over circuit 3, [and valves 7]." (Emphasis added.) In at least one embodiment of the present invention, a gas supply conduit 14 is integrated in the reaction circuit 1 to provide a gas flow through the measurement cell 6 for reaction between the OSI-material and the gas. The OSI-material is introduced into the measurement cell 6. The complete reaction circuit 1 is flushed with an O_2/N_2-gas flow which is supplied via a valve 8. The gas is pumped through the measurement cell 6 and the sample loop 4.

From paragraph [0024] of the instant application as originally filed, "[t]he measurement circuit 2 in the shown embodiment example is likewise designed as a closed circuit [independent from the

reaction circuit]...The measurement circuit [2] [in at least one embodiment] comprises a 4-way valve 9 for the removal, supply and the switching-through of a gas flow, a pump 10, an oxygen-sensitive sensor arrangement 11..., an evaluation unit 12..., and a humidification unit 13. As already mentioned above, the 6-way valve 7 which may be switched between the sample loop 4 and the switch-over branch 3, is also a constituent of the measurement circuit 2." (Emphasis added.) Indeed, the sensor 11 determines the oxygen concentration of the gas. From paragraph [0031] of the specification of the instant application as originally filed, nitrogen gas is pumped into the measurement circuit 2 so that foreign gas can be completely chased out, "wherein the 6-way valve 7 switches the switch-over branch 3 into the measurement circuit 2." (Emphasis added.) A valve 9 is closed such that the introduced gas quantity circulates in the closed measurement circuit 2 with the help of a pump 10.

The oxygen content of the circulated gas in the reaction circuit 1 of the instant application changes on account of the material accommodated in the measurement cell 6. The reaction gas containing oxygen circulates in the closed reaction circuit 1, and the OSI-material in the measurement cell 6 reacts with the oxygen, thereby changing the oxygen content of the reaction gas. The sample loop 4 is switched from the reaction circuit 1 into the measurement circuit 2 via valves 7 at certain time intervals for determining the oxygen concentration. By way of switching the valve 7, a defined volume part is conveyed from the reaction circuit 1 into the measurement circuit 2, and the oxygen concentration in the defined volume part is detected with the help of the oxygen-sensitive sensor 11. As such, a characteristic curve of the uptake of oxygen of the OSI-material in the measurement cell over time can be established, and a correlation between colour change of the measurement cell and the oxygen uptake may be made.

In view of the above, Michaels fails to disclose each and every limitation of independent claim 10 of the instant application, and independent claim 10 is, therefore, patentable. As claims 11-13 and 18-19 depend from independent claim 10, and recite additional patentable features, claims 11-13 and 18-19 are, therefore, likewise patentable. Accordingly, Applicant respectfully requests that the Examiner's §102 claim rejections be withdrawn.

Claim Rejections Under 35 U.S.C. §103:

At numbered parts 6-10 of the Office Action, the Examiner has rejected claims 14-15 under 35 U.S.C. §103(a) as being unpatentable over Michaels. Applicant respectfully traverses the Examiner's rejection. In view of the above, use of Michaels in making a §103(a) rejection cannot stand because one would have to imbue the Michaels device with structure that simply does not exist.

Furthermore, with regard to claim 14 of the instant application, Applicant submits that one skilled in the art would not rearrange the humidifier 74 of the Michaels device to be located before the sieve beds 10, 12 because such a modification changes the principle of operation of the Michaels device, and renders the Michaels device inoperable for its intended purpose of replacing lost moisture originally removed by the sieve beds 10, 12. According to MPEP §2143.01, "[i]f the proposed modification or combination of the prior art would... render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification", and "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." (Emphasis added.) As aforementioned, the separation material of the Michaels device adsorbs water vapor (i.e., moisture). From col. 8, lines 37-40, Michaels teaches that the principle of operation of the humidifier 74 is for adding "moisture to the oxygen primary product to replace the moisture removed by the beds." (Emphasis added.) As such, it would be inefficient and contrary to logic to place a humidifier 74 before the separation material because such a location would contribute to a faster "breakthrough" of the Michaels device, would change the principle of operation of the Michaels device, and would render the Michaels device inoperable for its intended purpose of replacing moisture after the sieve beds 10, 12 removed moisture. As such, there is no motivation or suggestion to make the alleged modification, and the Examiner has failed to present a prima facie case of obviousness.

With regard to claim 15 of the instant application, Applicant submits that one skilled in the art would not use transparent sieve beds for observing a color change of the physical separation material, and that the Examiner is improperly employing impermissible hindsight. Michaels is silent on observing color in any manner, let alone on observing a color change of the physical separation

material. Moreover, as established above, Michaels does not disclose an OSI-material. Therefore, one skilled in the art would not simply use transparent sieve beds to observe a color change, on which Michaels is also silent. The only place that teaches observation of color, particularly of an OSI-material (e.g., oxygen indicator), is the specification of the instant application. As such, the assertion of using transparent sieve beds for observing a color change of the physical separation material is made only with the benefit of the teachings of the instant application. According to MPEP §2142, "impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." (Emphasis added.) When reviewing prior art, the Examiner must take "into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure." *In re McLaughlin* 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971) (Emphasis added.). However, as aforementioned, the Examiner is in fact looking to the disclosure of the present invention for facts rather than to the prior art because the prior art does not contain evidence to support the Examiner's assertion of using transparent sieve beds for observing a color change.

In view of the above, Michaels cannot, and does not, result in the present invention as recited in independent claim 10 of the instant application, and independent claim 10 is, therefore, patentable. As claims 14-15 depend from independent claim 10, and recite additional patentable features, claims 14-15 are, therefore, likewise patentable. Accordingly, Applicant respectfully requests that the Examiner's §103 rejections be withdrawn.

Allowable Subject Matter:

Applicant respectfully acknowledges that the Examiner would allow claims 16 and 17 of the instant application if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, in view of the aforementioned gross deficiencies of Michaels, Applicant submits that the pending claims of instant application are allowable.

Conclusion:

In view of the foregoing, Applicant submits that the instant claims are in condition for

allowance. Early and favorable action is earnestly solicited. The fee for the petition is included herewith. In the event there are any fees due and owing in connection with this matter, please charge same to our Deposit Account No. 11-0223.

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Respectfully submitted,

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